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Association between lung cancer somatic mutations and occupational exposure in never-smokers

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Titre	Association between lung cancer somatic mutations and occupational exposure in never-smokers
Type de publication	Article de revue
Auteur	Paris, Christophe [1], Do, Pascal [2], Mastroianni, Bénédicte [3], Dixmier, Adrien [4], Dumont, Patrick [5], Pichon, Eric [6], Chouaid, Christos [7], Coudert, Bruno [8], Foucher, Pascal [9], Fraboulet, Séverine [10], Locatelli-Sanchez, Myriam [11], Baize, Nathalie [12], Dansin, Eric [13], Moreau, Lionel [14], Vincent, Michel [15], Missy, Pascale [16], Morin, Franck [17], Moro-Sibilot, Denis [18], Couraud, Sébastien [19]
Organisme	BioCAST/IFCT-1002 study investigators [20]
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Résumé en anglais	Occupational exposure constitutes a common risk factor for lung cancer. We observed molecular alterations in 73% of never-smokers, 35% of men and 8% of women were exposed to at least one occupational carcinogen. We report herein associations between molecular patterns and occupational exposure.BioCAST was a cohort study of lung cancer in never-smokers that reported risk factor exposure and molecular patterns. Occupational exposure was assessed via a validated 71-item questionnaire. Patients were categorised into groups that were unexposed and exposed to polycyclic aromatic hydrocarbons (PAH), asbestos, silica, diesel exhaust fumes (DEF), chrome and paints. Test results were recorded for EGFR, KRAS, HER2, BRAF and PIK3 mutations, and ALK alterations.Overall, 313 out of 384 patients included in BioCAST were analysed. Asbestos-exposed patients displayed a significantly lower rate of EGFR mutations (20% versus 44%, p=0.033), and a higher rate of HER2 mutations (18% versus 4%, p=0.084). ALK alterations were not associated with any occupational carcinogens. The DEF-exposed patients were diagnosed with a BRAF mutation in 25% of all cases. Chrome-exposed patients exhibited enhanced HER2 and PIK3 mutation frequency.Given its minimal effects in the subgroups, we conclude that occupational exposure slightly affects the molecular pattern of lung cancers in never-smokers. In particular, asbestos-exposed patients have a lower chance of EGFR mutations.
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